Fishery Ecosystem Plan Supporting Habitat, Ecosystem-Based and Marine Spatial Management in The South Atlantic Region

Ocean Planning in South Carolina: Living Marine Resources and Habitats

> SCDNR MRRI December 2, 2010

Charleston, South Carolina

Roger Pugliese SAFMC





Overview

- Foundation for Habitat Conservation and Goals for Ecosystem-Based Management
- Fishery Ecosystem Plan and Comprehensive Ecosystem-Based Amendments
- Spatial Management
- Ecosystem Modeling and Fisheries Oceanography
- Tools Developed to Support Habitat Conservation, Ecosystem-Based and Spatial Management
- Regional Cooperation and Coordination





"The term 'essential fish habitat' means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."

Magnuson-Stevens Act §3(10)

Habitat Area of Particular Concern (HAPC) as "subsets of EFH based on the:

- importance of the ecological function provided by the habitat
- extent to which the habitat is sensitive to human-induced environmental degradation
- whether, and to what extent, development activities are, or will be, stressing the habitat type
- rarity of the habitat type

Meeting the Mandate

Regulations in FMPs and Habitat Based FMPs- (Pelagic Sargassum Habitat and Coral, Coral Reef and Live Bottom Habitat)

- Gear restrictions
- Harvest prohibitions
- Bycatch Reduction
- Area Management

Habitat Advisory Panel Coordination of EFH Policy and Policy Statements:

- •Marine Aquaculture
- •Marine Submerged Aquatic Vegetation
- Beach Dredging and Filling
- •Energy Exploration, Development, Transportation and Hydropower Re-Licensing
- Alterations to Riverine, Estuarine and Nearshore Flows
- •Marine and Freshwater Invasive Species

NMFS EFH Review and Consultation

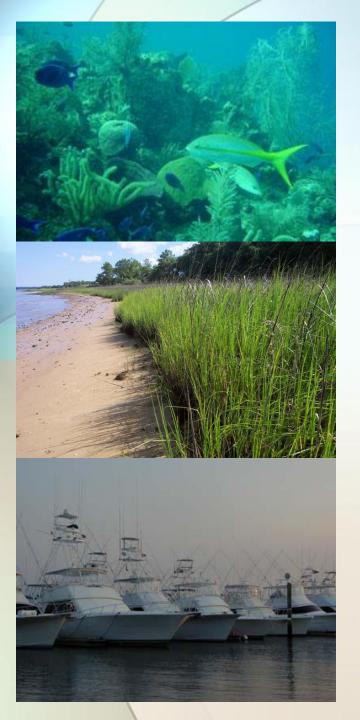
SAFMC Habitat Plan



Developed in Cooperation with the Council's Habitat Advisory Panel members and other technical experts

Presents a snapshot of the biological, social and economic characteristics of South Atlantic Region ecosystem from the headwaters of the river systems to off the Continental Shelf





Goals of Ecosystem-Based Management

- Maintaining/improving ecosystem structure and function
- Maintaining/improving economic, social and cultural benefits from resources
- Maintaining/improving biological, economic and cultural diversity

SAFMC Fishery Ecosystem Plan

Meeting the EFH Mandate



FINAL
HABITAT PLAN FOR THE SOUTH ATLANTIC REGION:
ESSENTIAL FISH HABITAT REQUIREMENTS FOR FISHERY
MANAGEMENT PLANS OF THE SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL
THE SHRIMP FISHERY MANAGEMENT PLAN,
THE RED DRUM FISHERY MANAGEMENT PLAN,
THE SHADDER GEOLUPE BUSHEV MANAGEMENT DLAN
THE SHADDER GEOLUPE BUSHEV MANAGEMENT DLAN

THE SNAPPER GROUPER FISHERY MANAGEMENT PLAN,
THE COASTAL MIGRATORY PELAGICS FISHERY MANAGEMENT PLAN,
THE GOLDEN CRAB FISHERY MANAGEMENT PLAN,
THE SPINY LOBSTER FISHERY MANAGEMENT PLAN,
THE CORAL, CORAL REFFS, AND LIVE HA

FISHERY MANAGEMEN
THE SARGASSUM HABITAT FISHER

OCTOBER 1998

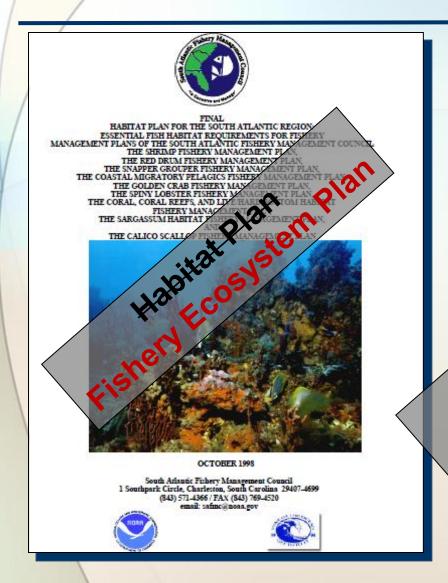
South Arlantic Fishery Management Council 1 Southpark Circle, Charleston, South Carolina 29407-4699 (843) 571-4366 / FAX (843) 769-4520 email: safinc@noas.gov







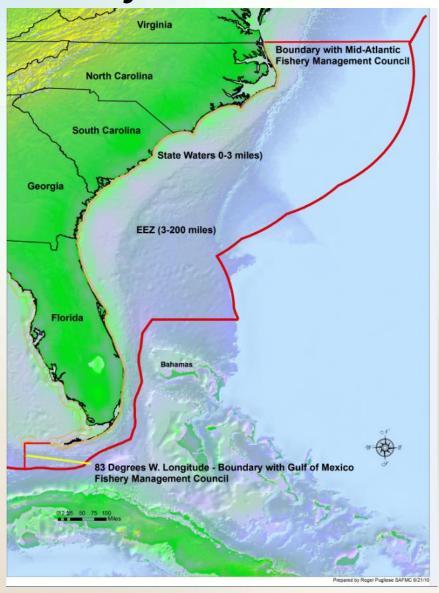
Evolution-





Scope of Fishery Ecosystem Plan

The inland boundary for the FEP is the coastal watershed plus the inland extent of diadromous fish. Regional Boundary Beach to 200 miles offshore from the NC/VA border through the Florida Keys (83Degrees W Longitude).



FEP Development Process

Conducted >20 Habitat, Issue Based, Ecosystem Model and Research Workshops

Writing Teams reviewed, revised and expanded chapters of the Habitat Plan and developed new chapters for the FEP which is completed April 2009.







Fishery Ecosystem Plan

- Provides a comprehensive view of the Biological, Social and Economic characteristics of the South Atlantic Ecosystem
- Serves as a Source Document for Comprehensive Ecosystem-Based Amendments (CE-BA)
- Addresses Essential Fish Habitat (EFH) mandates in the EFH Final Rule highlighting
 - spatial presentations of designated EFH and EFH-HAPCs presented through Council Internet Map Server
 - Updates Essential Fish Habitat (EFH) and EFH-HAPC information



Volumes Comprising the FEP

Volume I: Introduction and Overview of the SA Ecosystem

Volume II: Habitats and Species

Volume III: Human and Institutional Environment

Volume IV: Threats to the Ecosystem and Recommendations

Volume V: Research and Data Needs

Volume VI: References and Appendices



Volume I: Introduction and Overview

- Background Supporting Move to Ecosystem Based Management
- Habitat protection and ecosystem management responsibilities as defined in the Magnuson-Stevens Act
- Fishery Ecosystem Plan and Comprehensive Ecosystem-Based Management Amendment Development
- Ecosystem Management Goals
- Overview of the South Atlantic Ecosystem
- Geographic Boundaries, Climate and Weather, Habitat and Food Web and Current Area Management





Volume III: South Atlantic Human and Institutional Environment

The Human Environment

Coastal Communities

Fisheries Under SAFMC Jurisdiction

- Penaeid Shrimp Fishery
- Deepwater Shrimp Fishery
- Snapper Grouper Fishery
- Golden Crab Fishery
- Coastal Migratory Pelagics Fishery
- Spiny Lobster Fishery
- Live Rock Aquaculture and Allowable
 Octocoral Fishery
- Sargassum Fishery
- Dolphin and Wahoo Fishery
- Calico Scallop Fishery

- Description of fishing practices, vessels and gear
- Economic description of the fishery
- Social and cultural environment
- Bycatch



Volume III: South Atlantic Human and Institutional Environment (cont.)

Other Managed Species in the South Atlantic

- Atlantic Menhaden Fishery
- Striped Bass Fishery
- Anadromous and Catadromous Species
- Red Drum Fishery
- Weakfish and other Sciaenid Fisheries
- Bluefish Fishery
- Summer Flounder Fishery
- Horseshoe Crab Fishery
- Highly Migratory Pelagic Species Fishery





- Adverse Impacts of Non-fishing Activities
- Adverse Impacts of Fishing Activities
- Essential Fish Habitat, Essential Fish Habitat Habitat
 Areas of Particular Concern and Coral HAPCs
- Essential Fish Habitat Policies and Policy Statements



Volume IV: Threats to the South Atlantic Ecosystem and Recommendations (cont.)

Policy Statements of Essential Fish Habitat Types

 Policy for the Protection and Enhancement of Marine Submerged Aquatic Vegetation (SAV) Habitat

Policy Statements on Non-fishing Activities Affecting Habitat

- Policies for the Protection and Restoration of EFH from Beach Dredging and Filling and Large-Scale Coastal Engineering
- Policies for the Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing
- Policies for the Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows

Activity-based policies





- Data and Research Necessary to Support Ecosystem Management
- Research Needs and Research and Monitoring Plans
- South Atlantic Research and Monitoring Priorities 2008
- SAFMC Fishery Management Plans
- Other Managed Species
- Inter-jurisdictional Prioritized Research Needs
- Recent and Ongoing Research on HMS Species



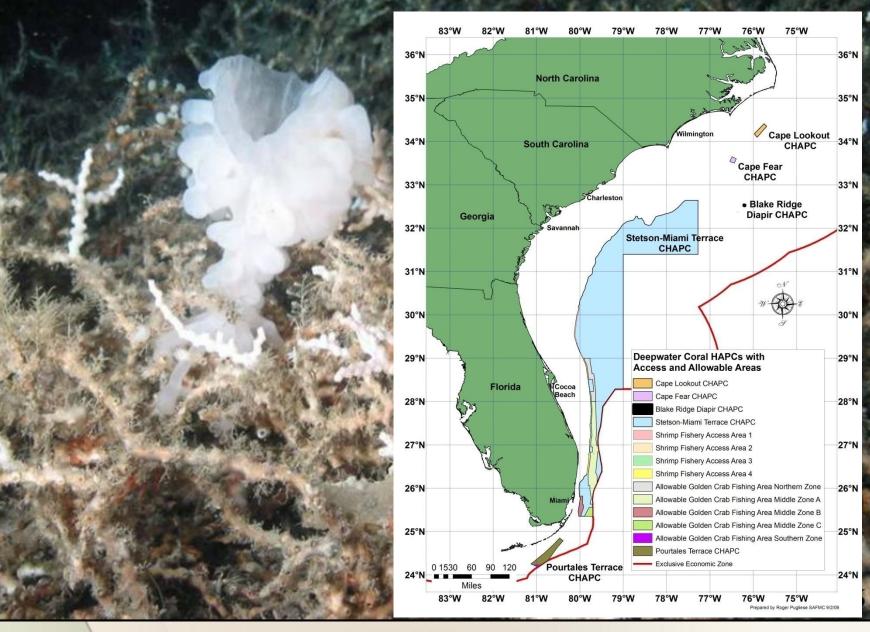


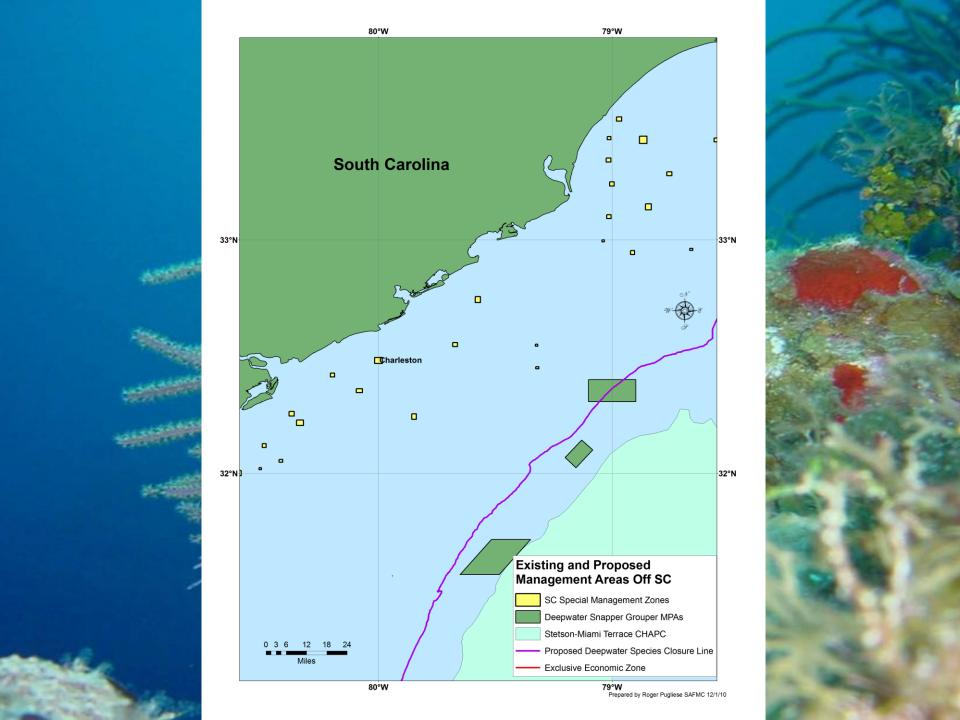
- Coral Habitat Areas of Particular Concern
- Special Management Zones
- Gear and Seasonal Closures
- Deepwater Marine Protected Areas
- Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern

COMPREHENSIVE ECOSYSTEM -BASED MANAGEMENT AMENDMENT 1:

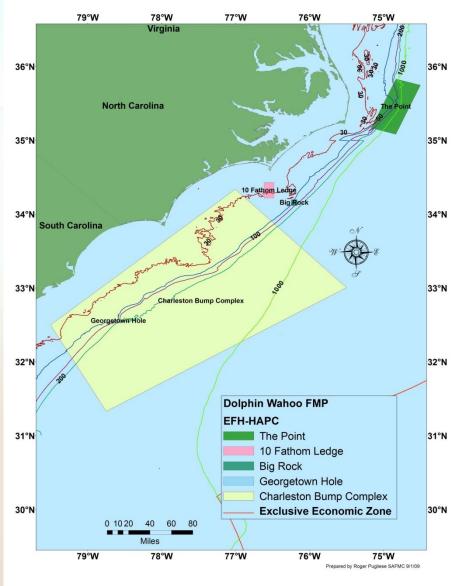
- Protect deepwater coral ecosystems in the South Atlantic Fishery
 Management Council's by establishing five Deepwater Coral Habitat
 Areas of Particular Concern (HAPCs).
- Addresses Essential Fish Habitat (EFH) mandates in the EFH Final Rule highlighting
 - spatial presentations of designated EFH and EFH-HAPCs presented through Council Internet Map Server
 - The FEP presentation of updated habitat information supporting EFH designations.

Ecosystem-Based Spatial Management Coral Habitat Areas of Particular Concern



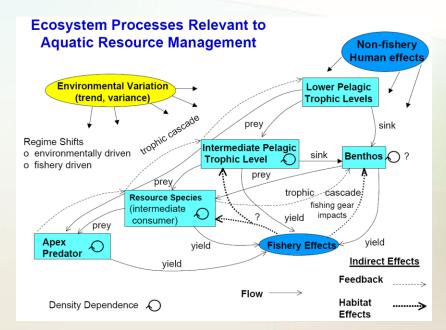


Comprehensive Ecosystem Amendment 1 Spatial Presentations of EFH and EFH-HAPCs

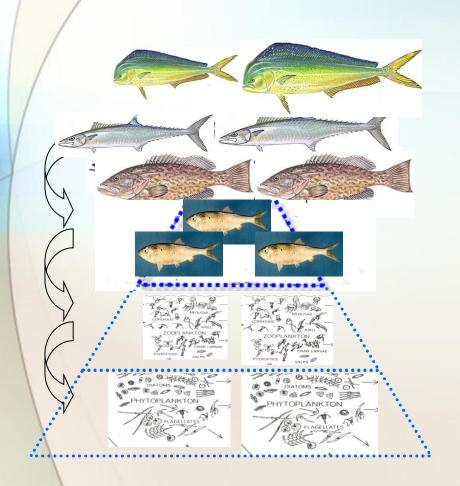


Ecosystem Modeling

- The development of Ecosystem Models tailored to the South Atlantic region, will provide the Council and the network of regional Ecosystem Partners with a new set of tools to better understand the complexity of the system and provide analytical methods to evaluate the impacts of fishing and non-fishing activities
- Integration of spatial presentation of ecological data on fish, habitat (pelagic and benthic), fishery operations provides the foundation for the information system supporting future model development
- Therefore, we need to be measuring, mapping and monitoring for variables that will be useful for ecosystem models



Food Web Modeling



Preliminary and strawman Ecopath models have been developed for the South Atlantic Region

Presently facilitating regional collaboration on future model development including but not limited to a South Atlantic visualized Ecopath with Ecosim model developed through the Lenfest Ocean Program

South Atlantic Fisheries Oceanography and Modeling Connectivity of Habitats Described in the FEP

Characteristics of SE Coastal Ocean

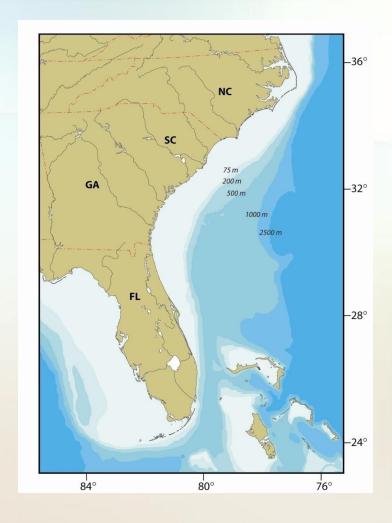
Range of shelf widths

Along shelf break -major boundary current
Loop Current
Florida Current
Gulf Stream

FW input -

Distributed input from a number of rivers, river drainage basins primarily in these coastal states

Biogeographically – temperate to sub-tropical transition zone



Source: Summary of SE US coastal ocean observations and associated physical modeling Jim Nelson, Skidaway Institute of Oceanography, Savannah, Georgia USA with input from: Cisco Werner, University of North Carolina, Chapel Hill, North Carolina USA, Dave Eslinger, NOAA CSC, Charleston, South Carolina USA, Ecosystem modeling in the South Atlantic Region, Lenfest Ocean Program Coordination Meeting, UBC, October 2006

South Atlantic Fisheries Oceanography and Modeling

- Refine current or water column designations of EFH and EFH-HAPCs in the Fishery Ecosystem Plan (e.g., Gulf Stream and Florida Current)
- Provide oceanographic models linking benthic, pelagic habitats and food webs
- Provide oceanographic input parameters for ecosystem models
- Integration of OOS information into Fish Stock Assessment process in the SA region
- Facilitate OOS system collection of fish and fishery data and other research necessary to support the Council's use of area-based management tools in the SA Region
- Integration of OOS program capabilities and research Needs into the South Atlantic Fishery Ecosystem Plan
- Collaboration with SECOORA to integrate OOS products on the Council's Habitat and Ecosystem Internet Mapping System to facilitate model and tool development
- Develop Arc Service to provide permissioned researchers access to data or products including those collected/developed by SA OOS partners

Habitat and Ecosystem Support Tools:

South Atlantic Habitat and Ecosystem Webpage

South Atlantic Habitat and Ecosystem Internet Map Server (IMS) and ArcGIS Services

Developed in cooperation with Florida Fish and Wildlife Research Institute to support ecosystem-based resource management, habitat, species and ecosystem research, and regional collaboration

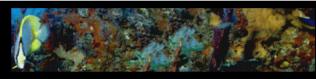
- Habitat and Ecosystem Section of the Website provides online access to Habitat Information, the Fishery Ecosystem Plan and Comprehensive Ecosystem-Based Amendments
- IMS provides access to related GIS data supporting the FEP
- EcoSpecies, EcoResearch, and EcoFish modules on IMS
- EcoSpecies and EcoResearch modules expanded and facilitating transition to ArcGIS Server applications (Present)

Habitat and Fishery Ecosystem Plan Support Tools: South Atlantic Habitat and Ecosystem Homepage



South Atlantic Fishery Management Council

Habitat and Ecosystem Section



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Regulations by Species

Council Meetings NMFS Permits

Fishery Management Plans

Stock Assessments (SEDAR)

Mapping/GIS

Deepwater Coral (Lophelia and Oculina Bank)

Marine Protected Areas

Protected Resources

Ocean Observing Systems

Limited Access Privileges

Ecosystem-Based Management



From deepwater canyons off the Carolinas to the shallow tropical waters surrounding the Florida Keys, marine habitats of the South Atlantic are as diverse as the species that inhabit them. To address this diversity, the South Atlantic Council is adopting an ecosystem approach to fisheries management with the development of a Fishery Ecosystem Plan (FEP) and Comprehensive Ecosystem-Based Amendment (CE-BA) that will amend all the Council's Fishery Management Plans. The FEP will be updated periodically and serve as a source document for the initial and subsequent CE-BAs.

The Fishery Ecosystem Plan

The Fishery Ecosystem Plan evolved from the Council's Habitat Plan and involved a more thorough characterization of the South Atlantic Ecosystem. This effort aims at providing the Council with a foundation from which to attain a more comprehensive understanding of habitat and biology of species, fishery information, social and economic impacts of management and ecological consequences of conservation

and management. The Fishery Ecosystem Plan is comprised of six volumes:



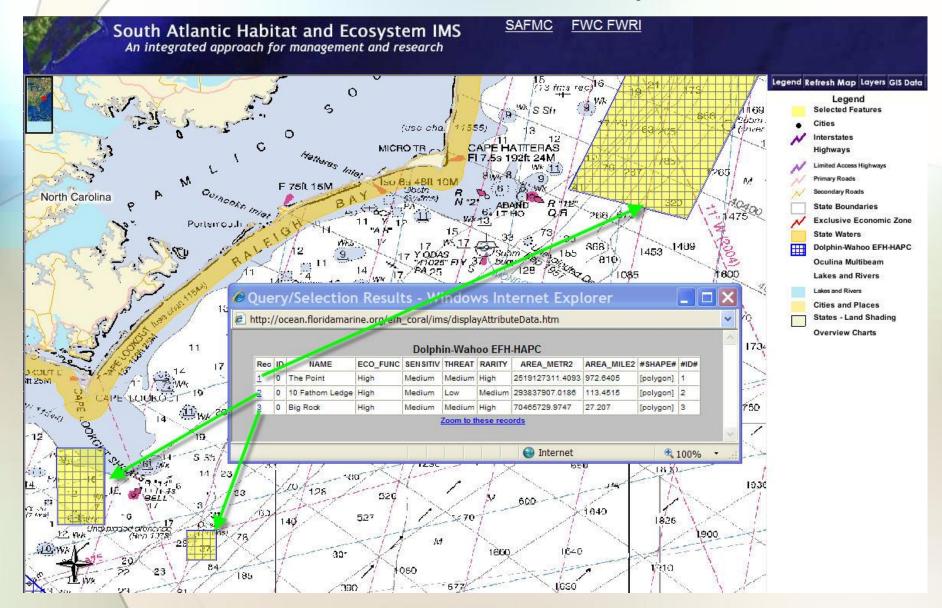
Volume I - Overview of the South Atlantic Ecosystem -- Contains background supporting move to ecosystem-based management, relates the development process of the Fishery Ecosystem Plan and Comprehensive Ecosystem-Based Amendments, and provides an overview of the South Atlantic ecosystem.

Appendix A - South Atlantic Climate

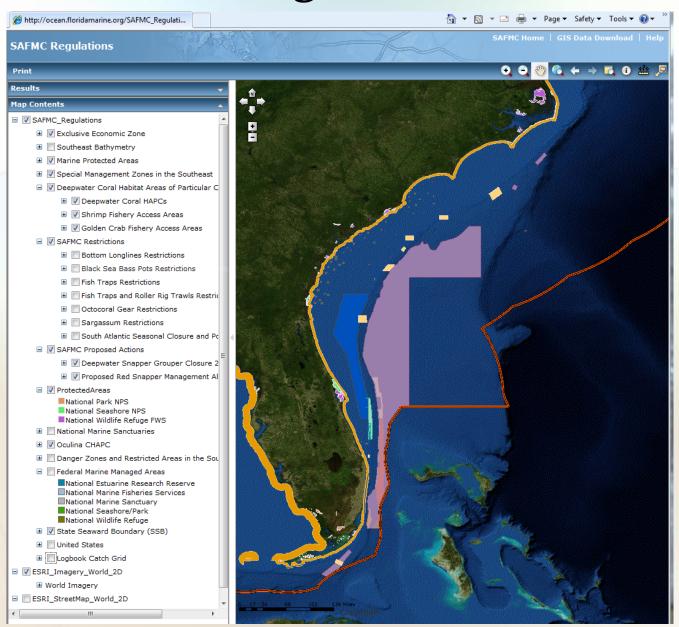
Appendix B - SAFMC Managed Areas

Volume II - South Atlantic Habitats and Species -- Contains detailed descriptions of the many habitats that comprise the South Atlantic ecosystem and their role as Essential Fish Habitat for various managed species. Also inlouded are descriptions of the managed species themselves, those under management by the Council and those that are managed by other agencies, including protected species. Finally, summaries of the South Atlantic states' Wildlife Conservation and Management Strategies are provided.

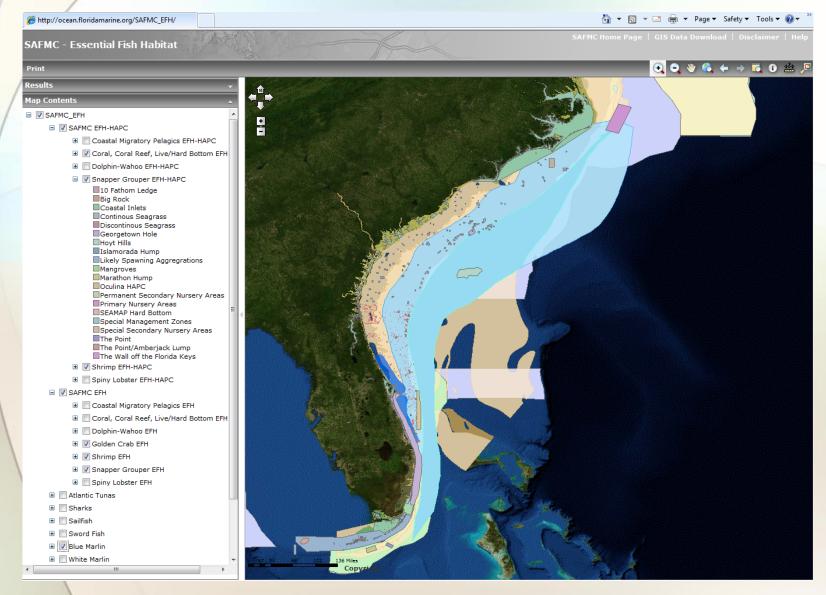
Sample screen shot of spatial presentation of EFH-HAPCs on South Atlantic Habitat and Ecosystem IMS



SAFMC Regulations Service



SAFMC Essential Fish Habitat Service



Ecosystem Coordination

- IOOS / Southeast Coastal Ocean Observing Regional Association (SECOORA)
- National Fish Habitat Plan / Southeast Aquatic Resource Partnership (SARP)
- South Atlantic Alliance
- South Atlantic Landscape Conservation Cooperative
- Southeast Area Monitoring Program (SEAMAP)



Southeast Coastal Ocean Observing Regional Association

OUR EYES ON THE SOUTHEAST'S OCEAN AND COASTAL WATERS

North Carolina

South Carolina

Georgia

Florida

Our valued ocean and coasts

Do you care about the impact of rising sea level on coastal economies and communities? Do you depend on marine weather forecasts to make decisions about boating and other recreational activities on the coast? Does protecting marine mammals, oysters, and other commercial and recreational fisheries for future generations matter to you? Do you depend on coastal tourism, ports or commercial fishing for your livelihood? Do you think a coherent national energy policy should include offshore alternative energy options, like wind and currents? Does the beauty and health of the coast and ocean impact your quality of life? Then you should know about SECOORA, the Southeast Coastal Ocean Observing Regional Association.

SECOORA helps save lives and protect property by

- improving the forecasting of hurricane-related impacts such as coastal inundation.
- supporting models that improve beach advisories for swimmers.
- improving rip current and nearshore surf zone forecasts.

SECOORA supports ecosystem based management by

- providing critical physical and biological data for fisheries management decisions.
- providing circulation models that inform understanding of larval transport.
- linking climate and ocean circulation anomalies to harmful algal blooms and impacts on corals and fisheries.

SECOORA improves marine safety and operations by

- generating wind, wave, and water level information necessary for marine weather forecasts.
- providing easy access to real-time weather and wave information.

What is SECOORA?

SECOORA is the regional solution to integrating coastal and ocean observing in the Southeast United States. SECOORA coordinates coastal and ocean observing activities and facilitates dialogue among stakeholders so that the benefits from the sustained operation of a coastal and ocean observing system are realized. SECOORA is one of 11 Regional Associations established nationwide through the NOAA Integrated Ocean Observing System (IOOS*). With the Nation's eyes on the oceans, coasts, and Great Lakes, SECOORA's goals include tracking, predicting, managing, and adapting to changes in the southeastern U.S. marine environment. SECOORA's members deliver the data and information needed to increase our understanding of our coastal waters so decision makers can take action to improve safety, enhance our economy, and protect our environment.



Gag grouper are the most common grouper in the SECOORA region. Managing fisheries is a SECOORA priority and members are using coastal and ocean observing data to address fisheries related issues. Photo: NOAA Photo Library/OAR/National Undersea Research Program (NURP)/UNCW

SECOORA Components

Buoy and Pier Moorings

Coastal High Frequency Radar Installations

Satellite Observations

Meteorological Observations

Ship-based Observations

Coastal and Riverine Sensor Networks

Computer Models

Ecological and Climate Forecasts

Education & Outreach Activities

Data Archives

Data Access and Visualization Tools

Southeast Aquatic Resource Partnership (SARP)



Activities by State



Quicklinks

Home

See Past Project Sites in Google Maps

New Aquatic Habitat Restoration Projects Funded

SIFN Workshop 2009 Presentations



Southeast Aquatic Habitat Plan (SAHP)

The Southeast Aquatic Habitat Plan (SAHP) guides the partners' projects to conserve southeastern aquatic habitats. Partners use SAHP objectives to improve, establish, or maintain riparian zones, water quality, watershed connectivity, sediment flow, bottoms and shorelines, coastal, estuarine and marine zones as well as to control hydrologic conditions and invasive or problem species. On a larger scale, this plan helps

(SAHP)



fot spots for at-risk fish and mussel species in the continental United State

SARP identify regional priorities and facilitate action for aquatic conservation and restoration. Read the plan.

Four pilot river basin conservation plans were initially developed to serve as models for the development of SAHP. Waterbodies were then prioritized and mapped using the Geographic Information System, based upon information from the State Wildlife Action Plans, the conservation plans, and other regional and national data. This prioritization process will compare the locations of aquatic habitats in the region with greatest need of restoration or conservation, with the strongest ecological systems, and with the greatest potential for ecological and economic impact.

As a regional Fish Habitat Partnership, SARP uses the SAHP and the prioritization process in its regional implementation of the National Fish Habitat Action Plan (NFHAP), a nationally focused fisheries conservation effort to address the loss and degradation of fish habitats in the nation. Because these two plans share many objectives and targets, aquatic habitat conservation in the southeast can be accomplished efficiently. On the basis of the plans, SARP facilitates and coordinates projects and data, and encourages best management practices to maximize the partners' regional and national efforts.

Programs

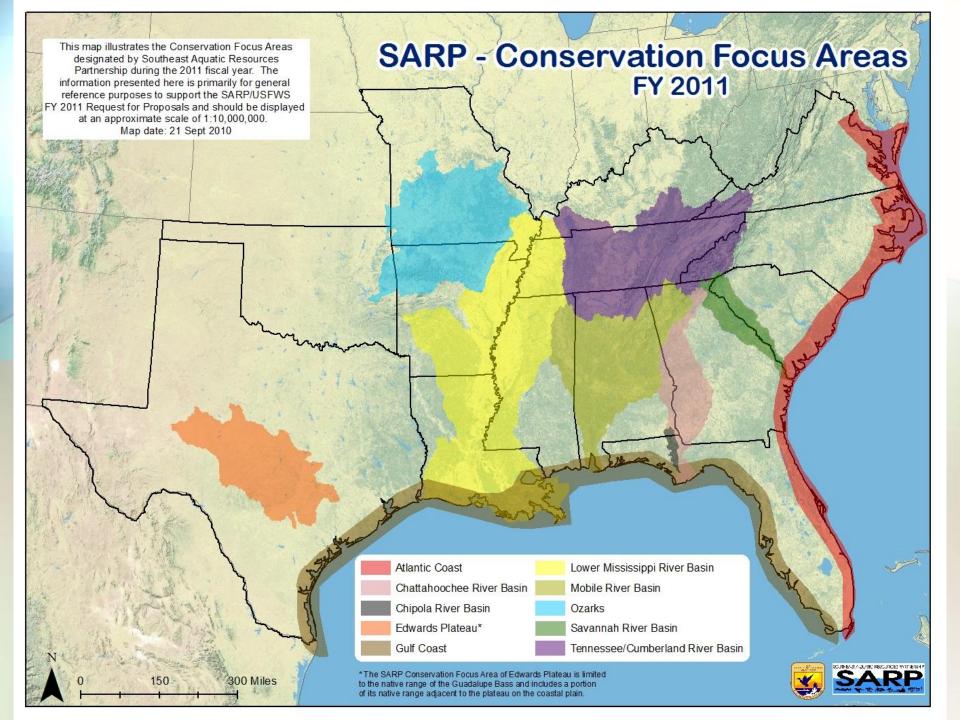
NOAA Community-Based Restoration Program (NOAA CRP)

Southeast Aquatic Habitat Plan (SAHP)

- > ANS Management Plans
- > Allen Dairy Project
- > Oyster Reef For Shoreline Stabilization
- > Oconee Habitat Enhancement
- > Bennett Bayou Tidal Marsh
- > Big South Fork Recreation
 With Habitat Protection
- > Habitat Data Collection On Buck Creek
- Cherokee National Forest Brook Trout Habitat
- > Reintroduce Brook Trout
- > Restoration Of Spawning Site On Ogeechee
- > Improve Connectivity At Troup Spring
- > Green River Wildlife

Southeast Aquatic Resource Partnership (SARP)

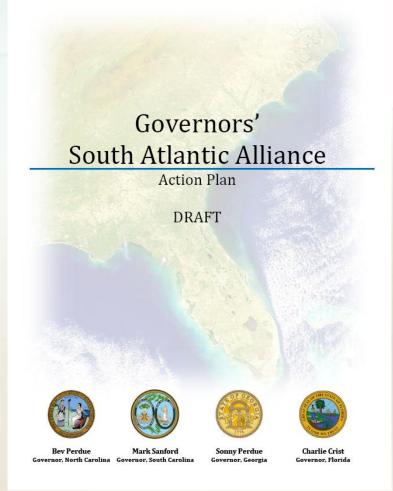




South Atlantic Alliance

ALLIANCE HISTORY

- Initiated in 2006, an Executive Planning Team (EPT) created a framework for the Governors South Atlantic Alliance by the end of 2007. The formal agreement between NC, SC, GA, and FL was executed in May 2009. The Agreement specifies that the Alliance will prepare a "Governors South Atlantic Alliance Action Plan" which will be reviewed annually for progress and updated every five years for relevance of content.
- Alliance Mission and Purpose: The intent of the Alliance is to promote collaboration among the four states, and with the support and interaction of federal agencies, academe, regional organizations, non-governmental organizations, and the private sector, to sustain and enhance the region's coastal and marine resources. The Alliance proposes to regionally implement science-based actions and policies that balance coastal and marine ecosystems capacities to support both human and natural systems.











Governors' South Atlantic Alliance

North Carolina . South Carolina . Georgia . Florida

Our Work

Agreement

Documents

Links

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Priority Issues

- Healthy Ecosystems
- Working Waterfronts
- Clean Coastal and Ocean Waters
- Disaster-Resilient Communities

Our Mission Statement

Implement science-based policies and solutions that enhance and protect the value of coastal and ocean resources of the southeastern United States to support the region's culture and economy now and for future generations.



North Carolina Governor

Bey Perdue

This Alliance will enable us to work together to protect our ocean environment and the health and economic well-being of the people dependent on those resources.



South Carolina Governor

Mark Sanford

The Alliance represents an important step toward enabling these states to pool their resources and better address the vital issues of economic development and environmental stewardship in the coming years.



Georgia Governor Sonny Perdue

The South Atlantic Alliance provides a unique opportunity to collaborate with neighboring states on mutual priority issues that are vital to sustaining our rich coastal heritage and growing economy.



Florida Governor

Charlie Crist

This new initiative will allow our scientists, decision-makers, stakeholders, visitors and citizens to answer the call to work collaboratively to protect the South Atlantic region's resources.









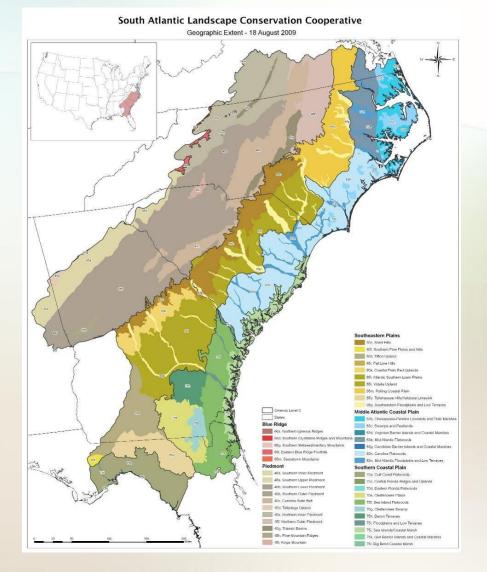
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Governors' South Atlantic Alliance Carolyn Boltin-Kelly **Deputy Commissioner** SCDHEC Ocean and Coastal Resource Management 1362 McMillan Ave., Ste. 400 Charleston, SC 29405

> P: 843-953-0225 F: 843-953-0201 boltincr@dhec.sc.gov

South Atlantic Landscape Conservation Cooperative (SALCC)

Landscape Conservation Cooperatives (LCCs) are applied conservation science partnerships focused on a defined geographic area that inform on-the-ground strategic conservation efforts at landscape scales. LCC partners include DOI agencies, other federal agencies, states, tribes, non-governmental organizations, universities and others.



Southeast Monitoring and Assessment Program (SEAMAP)

South Atlantic Activities - 2010

- South Atlantic Coastal Survey
- Bottom Mapping, Fish Habitat Characterization and Assessment
- Pamlico Sound Survey
- Southeastern Regional Taxonomic Center
- Data Management

Vision for the Future

- Update FEP every 5 years
- Coordinate with agencies and regional organizations in consideration of the ecosystem implications of their decisions or in establishment of priorities
- Move from single-species assessments/management to multispecies assessments/management and, ultimately, to true ecosystem assessment/management
- Engage in partnerships to develop regional management tools necessary to enhance the Council's ability to evaluate the ecosystem impacts of fishing (biological, economic and social) and better understand and address bycatch, predator-prey removal implications, fleet mobility/dynamics and habitat impacts. In addition, these tools will provide the ability to evaluate non-fishing activities and aspects of comprehensive place-based management in the region.
- Develop Comprehensive Ecosystem-Based Amendments to address regulations needed for individual fisheries or regulations across fisheries.

Governors' South Atlantic Alliance

North Carolina . South Carolina . Georgia . Florida





























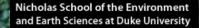
Cooperation, Collaboration, and Partnerships are the Foundation of the Fishery Ecosystem Plan supporting Habitat Conservation and the Evolution to Ecosystem-Based Fishery Management in the South Atlantic Region





MARMAD























Undersea Research Center



ocean explorer









SAFMC Habitat and Ecosystem Homepage

http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/ Default.aspx

SAFMC Habitat and Ecosystem Internet Map Server

http://www.safmc.net/EcosystemManagement/EcosystemBoundaries/MappingandGISData/tabid/632/Default.aspx

SAFMC - Regulations Service

http://ocean.floridamarine.org/SAFMC_Regulations/

• SAFMC - EFH Service

http://ocean.floridamarine.org/SAFMC_EFH/